

What is claimed:

- 1 1. A process for forming an absorbent composite, comprising the step of:  
2           blowing a stream of super absorbent polymer and air onto a non-  
3 woven core at a sufficiently high velocity to cause the super absorbent polymer  
4 to penetrate the surface of the core, wherein the super absorbent polymer is  
5 distributed substantially uniformly throughout the cross-section of the non-  
6 woven core and immobilized.
- 1 2. The process of claim 1 wherein the non-woven core has a thickness of at  
2 least 2 millimeters and comprises a matrix of synthetic fibers.
- 1 3. The process of claim 1 wherein the non-woven core has a thickness of  
2 between about 5 millimeters and 8 millimeters and comprises a matrix of  
3 synthetic fibers.
- 1 4. The process of claim 1 wherein the core comprises a matrix of fibers and  
2 the super absorbent polymer is immobilized by the matrix of fibers.
- 1 5. The process of claim 1 further comprising, before the step of blowing a  
2 stream of super absorbent polymer and air onto a non-woven core, the steps of:  
3           providing the non-woven core; and  
4           introducing an adhesive throughout the thickness of the core;  
5           wherein, after being blown into the core, the super absorbent  
6 polymer is immobilized by the adhesive.
- 1 6. The process of claim 5 which further includes applying heat to the core to  
2 cure the adhesive subsequent to blowing a mixture of super absorbent polymer  
3 and air onto the substrate.
- 1 7. The process of claim 5 wherein the air in the mixture of super absorbent  
2 polymer and air is provided at a sufficient temperature to cure the adhesive  
3 while allowing the super absorbent polymer to adhere to the adhesive.
- 1 8. The process of claim 5 wherein the core comprises a matrix of synthetic  
2 fibers which can be fabricated and stored in rolls in advance of adhesive and

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3 super absorbent application, and unrolled for application of the adhesive and  
4 super absorbent polymer.

1 9. The process of claim 5 wherein the adhesive comprises an acrylate which  
2 is introduced in an aqueous form.

1 10. The process of claim 9 wherein the adhesive is introduced throughout the  
2 thickness of the core using an atomizer to dispense the adhesive and a vacuum  
3 opposite the atomizer to assist in introducing the adhesive throughout the  
4 thickness of the core.

1 11. The process of claim 9 wherein the adhesive is introduced throughout the  
2 thickness of the core by dipping the core into an adhesive bath followed by  
3 squeezing out excess adhesive.

1 12. The process of claim 10 wherein the fabrication of the core, the  
2 introduction of the adhesive, the distribution of the super absorbent polymer,  
3 and the drying of the adhesive are performed in a continuous manufacturing line.

1 13. The process of claim 11 wherein the fabrication of the core, the  
2 introduction of the adhesive, the distribution of the super absorbent polymer,  
3 and the drying of the adhesive are performed in a continuous manufacturing line.

1 14. An apparatus for manufacturing super absorbent composite layers,  
2 comprising:

3 a component configured to feed a core onto a manufacturing line; and

4 a component configured to blow a mixture of super absorbent polymer  
5 and air onto the core at a sufficient velocity to cause the super absorbent  
6 polymer to penetrate into the core.

1 15. The apparatus of claim 14 further comprising a component configured to  
2 introduce an adhesive throughout the thickness of the core.

1 16. A super absorbent composite comprising:

2 a core having a thickness of at least 2 millimeters and comprising a  
3 matrix of synthetic fibers; and

4 particles of a super absorbent polymer distributed substantially uniformly  
5 throughout the thickness of the core, wherein the particles of super absorbent  
6 polymer are adhered to the synthetic fibers of the core by an adhesive.

1 17. The super absorbent composite of claim 16 wherein the thickness of the  
2 core is between about 5 millimeters and 8 millimeters.

18. The super absorbent composite of claim 16 wherein the adhesive  
comprises an acrylate.

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